

Remarks

In view of the above amendments and the following remarks, favorable reconsideration of the outstanding office action is respectfully requested. Claims 1 – 55 remain in this application. Claims 1, 30, and 40 – 42 have been amended. Claims 15 – 29 and 43 – 55 have previously been withdrawn from consideration, without prejudice.

**1. Information Disclosure Statement**

The Examiner has indicated that the Information Disclosure Statement filed 5/2/02 in paper No. 5 fails to comply with 37 CFR 1.98(a)(2) because a legible copy of the cited portion of the Handbook of Optics was not found with the submitted Information Disclosure Statement. A supplemental Information Disclosure is being filed in a separate paper.

**2. Drawings**

The Examiner has indicated that the corrected or substitute drawings received on 6/7/02, in paper No. 4 are acceptable.

**3. Specification**

The Examiner has indicated various informalities or typographical errors in the specification, which have been corrected above as appropriate.

In particular the Examiner states that the terms  $\Delta n$  and  $\Delta L$  do not appear in equations 1 and 2 on page 1 of the specification. In response, the Applicant has amended the paragraph to include an expression for  $\Delta n$  and  $\Delta L$ . No new matter has been added. The second paragraph of the Background of the Invention states that the variables with the parameter  $\phi$  are “n” and “L.” Thus, the expressions provided in new equations (3) – (5) are merely algebraic derivations of the expression found in equation (2).

**4. Claim Objections**

The Examiner has objected to claims 40 – 42 for insufficient antecedent basis in the claims. In response, the Applicant has amended claims 40 – 42 to provide antecedent basis in the claims.

## 5. § 112 Rejections

The Examiner has rejected claims 1 – 14 and 30 – 42 under 35 U.S.C. § 112, first paragraph, for failing to comply with the enablement requirement. In particular, the Examiner asserts that the subject matter was not described in the specification in such a way as to enable one of ordinary skill in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

First, even if everything the Examiner states is true, which it is not, the specification clearly teaches those of ordinary skill in the art how to make and/or use the invention. The specification clearly states that an anti-reflective coating such as  $\text{Al}_2\text{O}_3$  or  $\text{MgF}_2$  is to be disposed on a first side of an optically transparent component. Table I and Table II provide a transmission variation value for a test glass without an anti-reflective coating (e.g., 3.75%) as opposed to transmission variation value for a test glass with an anti-reflective coating (e.g., 0.61%). Thus, the specification teaches the formula of the coating, where to put the coating on the optical blank, and it also teaches that when the material is disposed on the blank. The specification also teaches that the transmission variation of the finished optical device is less than the component transmission variation without the coating. The preceding statement is almost a verbatim recitation of the subject matter of the independent claims. As such, the claimed subject matter is clearly enabled by the disclosure.

Referring to the Examiner's comments, the second paragraph of the Background of the Invention was amended to include an expression of  $\Delta n$  and  $\Delta L$ . No new matter was added. These expressions clearly follow algebraically from equation (2) and the discussion in the second paragraph of the Background of the Invention because the text states that only "n" and "L" are the variables in parameter  $\phi$ .

The Examiner also expresses confusion over  $\Delta n$  being referred to as both birefringence and refractive index inhomogeneity. The Applicant respectfully points out that it is understood by those of ordinary skill in the art that the term "birefringence" is interchangeable with the term "refractive index inhomogeneity." In other words, when an optical blank is characterized by a refractive index that is inhomogeneous throughout, the optical blank is said to be birefringent.

Accordingly, the Applicant respectfully requests that the rejection of claims 1 – 14 and 30 – 42 under 35 U.S.C. § 112, first paragraph, be withdrawn.

## 5. § 102 Rejections

### A. Otani

The Examiner has rejected claims 1, 3 – 11, 14, 30 – 36, and 39 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,472,087 to Otani et al. (hereinafter Otani).

Otani is directed to various compositions of antireflection films for use in the ultraviolet wavelength region. The antireflection film may be constructed in four-layered, or five-layered, or six-layered structure, using  $\text{Al}_2\text{O}_3$  for high-index layers and  $\text{AlF}_3$  or  $\text{MgF}_2$  for low-index layers. Vacuum evaporation, sputtering, or CVD is used for formation of the antireflection film.

According to **MPEP 2131**, “to anticipate a claim, the reference must teach every element of the claim.” A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

### Claim 1

Claim 1 is directed to an optical device for transmitting light having a predetermined bandwidth of wavelengths. The optical device is characterized by an optical device transmission variation. The optical device includes an anti-reflective coating disposed on a first side of an optically transparent component, the anti-reflective coating including at least one layer of material. The at least one layer of material has a predetermined layer thickness and a predetermined layer refractive index. The optically transparent component is characterized by a component light transmission variation, the component light transmission variation being a function of a component thickness, at least one physical characteristic, and a component refractive index.

Otani does not disclose a component thickness that is selected based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation when the anti-reflective coating is disposed on a first side of an optically transparent component, as recited in claim 1.

Claim 30

Claim 30 is directed to a method for making an optical device for transmitting light having a predetermined bandwidth. The optical device is characterized by an optical device transmission variation. The method includes the step of selecting a coating including at least one layer of anti-reflective material, the at least one layer of material having a predetermined layer thickness and a predetermined layer refractive index. The method also includes the step of providing an optically transparent component characterized by a component light transmission variation. The component light transmission variation is a function of a component thickness, at least one physical characteristic, and a component refractive index.

Otani does not disclose selecting the component thickness based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation, as recited in claim 30.

Accordingly, the Applicant asserts that claims 1 – 14, and 31 – 42 are allowable under 35 U.S.C. § 102(e).

**B. Levinson**

The Examiner has rejected claims 1, 3 – 11, 14, 30 – 36, and 39 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application No. US2002/0132171A1 to Levinson et al. (hereinafter Levinson).

Levinson is directed to a method of and system for reducing the absorption of light by opaque material in a photomask. The method includes providing a photomask substrate, and applying an opaque material to one side of the photomask substrate. The interface between the opaque material and photomask substrate reflects at least 80 percent of the light through the photomask.

Claim 1

Claim 1 is directed to an optical device for transmitting light having a predetermined bandwidth of wavelengths. The optical device is characterized by an optical device transmission variation. The optical device includes an anti-reflective coating disposed on a first side of an optically transparent component, the anti-reflective coating including at least one layer of material. The at least one layer of material has a predetermined layer thickness

and a predetermined layer refractive index. The optically transparent component is characterized by a component light transmission variation, the component light transmission variation being a function of a component thickness, at least one physical characteristic, and a component refractive index.

Levinson does not disclose a component thickness that is selected based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation when the anti-reflective coating is disposed on a first side of an optically transparent component, as recited in claim 1.

#### Claim 30

Claim 30 is directed to a method for making an optical device for transmitting light having a predetermined bandwidth. The optical device is characterized by an optical device transmission variation. The method includes the step of selecting a coating including at least one layer of anti-reflective material, the at least one layer of material having a predetermined layer thickness and a predetermined layer refractive index. The method also includes the step of providing an optically transparent component characterized by a component light transmission variation. The component light transmission variation is a function of a component thickness, at least one physical characteristic, and a component refractive index.

Levinson does not disclose selecting the component thickness based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation, as recited in claim 30.

Accordingly, the Applicant asserts that claims 1 – 14, and 31 – 42 are allowable under 35 U.S.C. § 102(e).

#### **6. § 103 Rejections**

The Examiner has rejected claims 2, 12 – 13, 37 – 38, and 40 – 42 under 35 U.S.C. § 103 as being unpatentable for obviousness over Otani, or in the alternative, over Levinson.

According to the **MPEP 2143**, three basic criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As pointed out by the Applicant in Section 5 above, neither Otani nor Levinson teach or suggest all of the limitations of independent claim 1 or independent claim 30. In particular, neither reference teaches or suggests a component thickness that is selected based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation when the anti-reflective coating is disposed on a first side of an optically transparent component, as recited in claim 1. Further, neither reference teaches or suggests the step of selecting the component thickness based on the predetermined bandwidth, the predetermined layer thickness, the predetermined layer refractive index, the at least one physical characteristic, and the component refractive index, whereby the optical device transmission variation is less than the component light transmission variation, as recited in claim 30.

Claims 2, and 12 – 13, and claims 37 – 38, and 40 – 42 are allowable by virtue of their dependency from claim 1 and claim 30, respectively. Accordingly, the Applicant asserts that claims 2, 12 – 13, 37 – 38, and 40 – 42 are allowable under 35 U.S.C. § 103(a).

## 7. Conclusion

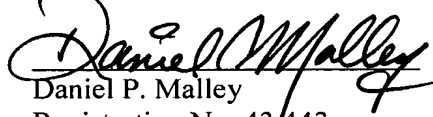
Based upon the amendments, remarks, and papers of record, Applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests reconsideration of the pending claims 1 – 14 and 30 – 42 and a prompt Notice of Allowance thereon.

Applicant believes that a one month extension of time is necessary to make this Response timely. Should Applicant be in error, Applicant respectfully requests that the Office grant any further time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Response timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 50-0289

Please direct any questions or comments to Daniel P. Malley at (607) 256-7307.

Respectfully submitted,

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Date: December 22, 2003